AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listing of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for determining the responsiveness of a data transmission rate of data packets to packet drops in a distributed communication network, ~~each of the data packets having appended to data thereof a packet designator including an address of a source node and an address of a destination node, each of the data packets being assigned to a corresponding one of a plurality of flows such that the packet designators of the data packets in each of the plurality of flows have equivalent corresponding source node addresses and equivalent corresponding destination node addresses,~~ the communication network including a plurality of switching nodes having a set of the plurality of flows respectively traversing therethrough, the method comprising the steps of:

~~selecting at each of the plurality of switching nodes at least one aggregating property;~~

~~forming a respective aggregate from the set of flows at each of the plurality of switching nodes in accordance with a corresponding one of said at least one aggregating property;~~

assigning to each of the plurality of switching nodes a corresponding drop rate signature for specifying a corresponding packet drop rate, said drop rate signature at each of the plurality of switching nodes being orthogonal to said drop rate signature of all other ones of the plurality of switching nodes when each of said plurality of drop rate signatures are compensated for a DC offset;

setting a packet drop rate ~~for each of said respective aggregates~~ to said corresponding instantaneous packet drop rate;

perturbing said data transmission at perturbation intervals by intentionally dropping ~~from each of said respective aggregates~~ a number of packets according to time varying said corresponding instantaneous packet drop rate; and

~~measuring a perturbed packet transmission rate for each of said respective aggregates subsequent to said packet dropping step; and~~

estimating the responsiveness to packet drops ~~of each of said respective aggregates~~ from ~~said~~ a perturbed packet transmission rate measured subsequent to said intentional packet dropping.

2. (Currently Amended) ~~The~~ A method for determining the responsiveness of a data transmission rate of data packets to packet drops ~~as recited in Claim 1,~~ in a communication network, each of the data packets having appended to data thereof a packet designator including an address of a source node and an address

of a destination node, each of the data packets being assigned to a corresponding one of a plurality of flows such that the packet designators of the data packets in each of the plurality of flows have equivalent corresponding source node addresses and equivalent corresponding destination node addresses, the communication network including a plurality of switching nodes having a set of the plurality of flows respectively traversing therethrough, the method comprising the steps of:

selecting, at each of the plurality of switching nodes, at least one aggregating property;

forming a respective aggregate from the set of flows at each of the plurality of switching nodes in accordance with a corresponding one of said at least one aggregating property;

setting a packet drop rate for each of said respective aggregates;

dropping from each of said respective aggregates a number of packets according to said packet drop rate;

measuring a perturbed packet transmission rate for each of said respective aggregates subsequent to said packet dropping step; and

estimating the responsiveness to packet drops of each of said respective aggregates from said perturbed packet transmission rate, ~~whereby~~ wherein said packet drop rate setting step further includes the steps of:

assigning to each of the plurality of switching nodes a corresponding drop rate signature for specifying an instantaneous drop rate, said drop rate signature at each of the plurality of switching nodes being orthogonal to said drop rate signature of all other ones of the plurality of switching nodes when each of said plurality of drop rate signatures are compensated for a DC offset; and

setting said packet drop rate to said instantaneous drop rate.

3. (Currently Amended) The method for determining the responsiveness to packet drops as recited in Claim ~~2~~ <u>1</u>, ~~whereby~~ <u>wherein</u> said responsiveness estimation step includes the steps of:

providing <u>a responsiveness quantity as</u> an output filter at each of the plurality of switching nodes, said output filer <u>being a function of said corresponding instantaneous packet drop rate calculated over durations of said perturbation intervals, said output filter being further affected by a responsive portion of the flows respectively traversing through said each switching node</u> ~~responsive only to said drop rate signature assigned thereto~~; and

applying said output filter to said perturbed packet transmission rate ~~corresponding to each of said respective aggregates~~, said output filter providing at an output thereof said estimation of the responsiveness to packet drops corresponding to ~~each of~~ said <u>data transmission</u> ~~respective aggregates~~.

4. (Original) The method for determining the responsiveness to packet drops as recited in Claim 3, whereby said responsiveness estimation step further includes the step of compensating said drop rate signature for said DC offset prior to said output filter applying step.

5. (Original) The method for determining the responsiveness to packet drops as recited in Claim 4, whereby said drop rate signature is a temporal waveform having a sinusoidal profile.

6. (Original) The method for determining the responsiveness to packet drops as recited in Claim 4, whereby said drop rate signature is a temporal waveform having a substantially rectangular profile.

7. (Original) The method for determining the responsiveness to packet drops as recited in Claim 6, whereby said rectangular temporal waveform is controlled by a pattern of binary-valued bits by which a bit thereof in a first bit state sets said instantaneous drop rate to a predetermined drop rate and a bit thereof in a second bit state sets said instantaneous drop rate to zero.

8. (Original) The method for determining the responsiveness to packet drops as recited in Claim 7, whereby said pattern of binary-valued is selected by a code division multiple access code selection algorithm.

9. (Currently Amended) The method for determining the responsiveness to packet drops as recited in Claim ~~1~~ 3, further comprising, after said responsiveness estimation step, the step of estimating a non-conforming proportion of said data transmission, ~~whereby~~ said ~~responsiveness~~ non-conforming proportion estimating step ~~includes~~ including the steps of:

~~maintaining~~ calculating a ~~running~~ long time average of said responsiveness quantity ~~a total packet transmission rate corresponding to each said respective aggregates as a corresponding nominal packet transmission rate~~ by averaging said output filter over a plurality of responsiveness measurements; and

subtracting said responsiveness quantity from said long time average and dividing the result of said subtraction by said long time average ~~nominal packet transmission rate fro said corresponding perturbed packet transmission rate~~.

10. (Currently Amended) The method for determining the responsiveness to packet drops as recited in Claim ~~1~~ 2, further including the step of providing the packet designator with a source port number and a destination port number

11. (Currently Amended) The method for determining the responsiveness to packet drops as recited in Claim ~~1~~ 2, whereby said aggregating property is selected from the group consisting of a source port number, a destination port number and a network application as determined from said source port number or said destination port number.

Claim 12. (Canceled).

Claim 13. (Currently Amended) ~~The~~ A method for determining an amount of ~~non-conforming~~ traffic in a communication network non-conforming to a predetermined transmission control protocol, the traffic being transported in flows of data packets, each of the data packet having appended to data thereof a packet designator including an address of a source node and an address of a destination node, each of the data packets being assigned to a corresponding one of a plurality of flows such that the packet being assigned to a corresponding one of a plurality of flows such that the packet designators of the data packets in each of the plurality of flows have equivalent corresponding source node addresses and equivalent corresponding destination node addresses, the communication network including a plurality of switching nodes having a set of the plurality of flows respectively traversing therethrough, the method comprising the steps of:

selecting at each of the plurality of switching nodes at least one aggregating property;

forming a respective aggregate from the set of flows at each of the plurality of switching nodes in accordance with a corresponding one of said at least one aggregating property;

setting a packet drop rate for each of said respective aggregates;

dropping from each of said respective aggregates a number of packets according to said packet drop rate;

measuring a perturbed packet transmission rate for each of said respective aggregates subsequent to said packet dropping step;

estimating a responsiveness coefficient of each of said respective aggregates from said perturbed packet transmission rate;

maintaining an average of said responsiveness coefficient for each of said respective aggregates as a nominal responsiveness coefficient; and

calculating the amount of non-conforming traffic as a ratio of said responsiveness coefficient to said nominal responsiveness coefficient ~~as recited in Claim 12~~, ~~whereby~~ wherein said packet drop rate setting step further includes the steps of:

assigning to each of the plurality of switching nodes a corresponding drop rate signature for specifying an instantaneous drop rate, said drop rate signature at each of the plurality of switching nodes being orthogonal to said drop

rate signature of all other ones of the plurality of switching nodes when each of said plurality of drop rate signatures are compensated for a DC offset; and

setting said packet drop rate to said instantaneous drop rate.

14. (Original) The method for determining an amount of non-conforming traffic as recited in Claim 13, whereby said responsiveness coefficient estimation step includes the steps of:

providing an output filter at each of the plurality of switching nodes, said output filter responsive only to said drop rate signature assigned thereto; and

applying said output filter to said perturbed packet transmission rate corresponding to each of said respective aggregates, said output filer providing at an output thereof said estimation of said responsiveness coefficient corresponding to each of said respective aggregates.

15. (Original) The method for determining an amount of non-conforming traffic as recited in Claim 14, whereby said responsiveness coefficient estimation step further includes the step of compensating said drop rate signature for said DC offset prior to said output filter applying step.

16. (Original) The method for determining an amount of non-conforming traffic as recited in Claim 15, whereby said drop rate signature is a temporal waveform having a sinusoidal profile.

17. (Original) The method for determining an amount of non-conforming traffic as recited in Claim 15, whereby said drop rate signature is a temporal waveform having a substantially rectangular profile.

18. (Original) The method for determining an amount of non-conforming traffic as recited in Claim 17, whereby said rectangular temporal waveform is controlled by a pattern of binary-valued bits by which a bit thereof in a first bit state sets said instantaneous drop rate to a predetermined drop rate and a bit thereof in a second bit state sets said instantaneous drop rate to zero.

19. (Original) The method for determining an amount of non-conforming traffic as recited in Claim 18, whereby said pattern of binary-valued is selected by a code division multiple access code selection algorithm.

20. (Currently Amended) The method for determining an amount of non-conforming traffic as recited in Claim ~~12~~ 13, further including the step of providing the packet designator with a source port number and a destination port number.

21. (Currently Amended) The method for determining an amount of non-conforming traffic as recited in Claim ~~12~~ 13, whereby said aggregating property is selected from the group consisting of a source port number, a destination port number and a network application as determined from said source port number or said destination port number.